WIFI FOR VEHICULAR COMMUNICATION SYSTEMS

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Abstract: Today's Vehicles are became one of the element in Human life cycle. So we maintain this relation between vehicle and humans we need to assistant while we are in driving. This assistant system will be established by using the concept of vehicular communication system. In this Vehicular communication systems will enable many exciting applications that will make driving safer, more efficient and more comfortable. But this all system fails to provide complete security for the vehicle as well as humans. In this paper we focus on eliminating drawbacks of developed system we propose new effective communication system for the Intelligent Transportation System (ITS). In this vehicle consists of sensors, they absorbing the data of vehicle parameters, surrounding environment and feeding it to drivers for assistant in speed of driving, pollution control and traffic management. Along with establish communication between other vehicles and Traffic signals for safe navigation.

Key words: *ZigBee, wi-fi, Ir sensors, smoke sensor*

I. Introduction

Road facilities are a major concern in the developed country. Recent researches show that major numbers of fatal or serious accidents are associated with excessive or inappropriate speed, as well as changes in the roadway and vehicle parameters. Reduction of the number of accidents and mitigation of their consequences are a big concern for traffic authorities, the automotive industry and transport research groups. Researchers are greatly effort to develop vehicular communication and networking technology in two realistic ways vehicle to vehicle (V2V) in ad hoc mode and vehicle to infrastructure (V2I) with fixed nodes along the road. The potency to exchange information wireless via V2X is a foundation stone for building powerful Intelligent Transport Systems (ITS). In Europe, USA and Japan are great efforts made from automakers and governments to reach single standards through the several and common projects such as CAR 2 CAR Communication Consortium, Vehicle Safety Communication Consortium, and EUCAR SGA etc. Result from common effort is an international standard, IEEE802.11p also known as Wireless Access for Vehicular Environments (WAVE). This standard will be used as the groundwork for Dedicated Short Range Communications (DSRC). Vehicles are evolving from simple data consumers to intelligent agents that enable local collaborations with ample DSRC is the one step in the future, because it lets inter-vehicle and vehicle to infrastructure wireless communication. Wireless networking based on IEEE802.11 technology it has recently become popular and broadly available at low-cost for home networking and free Wi-Fi or commercial hotspots. The DSRC starting idea was to equip vehicular network nodes with off-the-shelf wireless technology such as IEEE802.11a. This technology is cost effective and has potential to grow and new versions have been recently produced. The latest standard of wireless local area network (WLAN) is IEEE802.11.The IEEE 802.11n standard promises to improve and extend most popular WLAN standards by significantly increasing throughput, reliability and reach. Nowadays dispositions of WLAN-based access technology are predominantly to stationer indoor and outdoor users who are most slowly moving and in range limited. Despite the fact that the standard has not been developed for fast dynamic usage, nothing limits it to be evaluated for vehicular communication systems. The motivation is to understand the interaction between the vehicle speed and good put of WLAN-based network.

II. BACKGROUND OF THIS PROPOSAL

Vehicular communication system is an advanced technology that can be used to minimize road accidents. Freeway and arterial management, emergency management, parking management, real time traffic network conditions and vehicle speed monitoring are controlled by the deployment of this system. But this system not efficiently reduces the accidents especially in particular high mobility zones.

III. PROPOSED HARDWARE SYSTEM

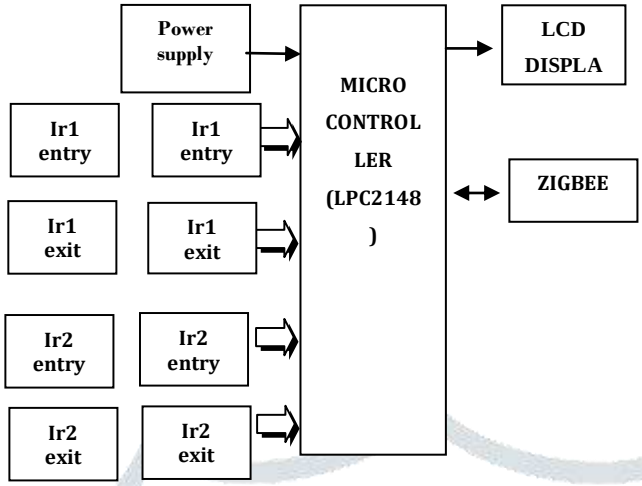


Fig.1.Block diagram

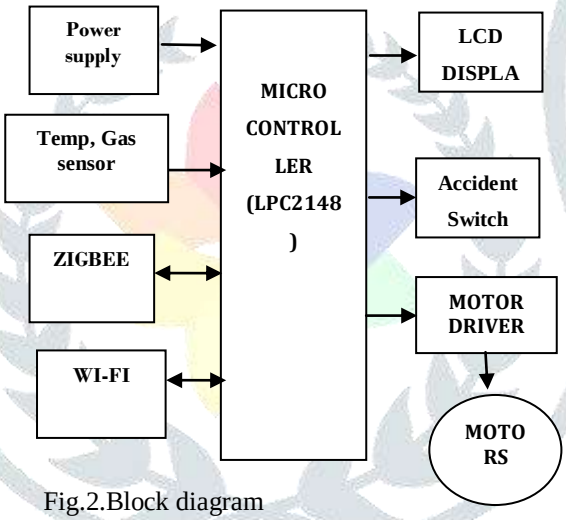


Fig.2.Block diagram

The Proposed system consisted of two parts which are hardware and software. In this hardware is designed by the concept of embedded system, in this we are using Ir sensors for identifying the zones. Vehicle got the information by wireless communication technology the speed of vehicle changed depending on the local speed limit. Every city, town or a village, can be marked and divided into individual zones. The division depends upon the area under which the business, residential, and industrial regions come under. The central business district being a very busy traffic zone demands the least speed limit, with the residential and industrial zones having lesser traffic densities, the speed limits will vary accordingly. LPC2148 (ARM7) microcontroller Programs are developed in Embedded C. Flash magic is used for loading programs into Microcontroller.

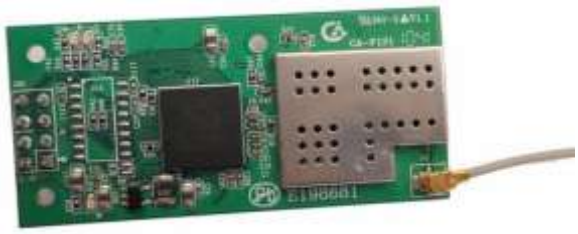
Micro controller: This section forms the control unit of the whole project. The Microcontroller forms the heart of the project because it controls the devices being interfaced and communicates with the devices according to the program being written.

ARM7TDMI: ARM is the abbreviation of Advanced RISC Machines, it is the name of a class of processors, and is the name of a kind technology too. The RISC instruction set, and related decode mechanism are much simpler than those of Complex Instruction Set Computer (CISC) designs.

Liquid-crystal display (**LCD**) is a flat panel display, electronic visual display that uses the light modulation properties of liquid crystals. Liquid crystals do not emit light directly.

IV. Board Hardware Resources Features

Wi-Fi



VSD03 is the new third-generation embedded Uart- Wifi modules studied by VSDTECH. Uart-Wifi is an embedded module based on the Uart serial, according with the WiFi wireless WLAN standards, it accords with IEEE802.11 protocol stack and TCP / IP protocol stack and it enables the data conversion between the user serial and the wireless network module. Through the Uart-Wifi module, the traditional serial devices can easily access to the wireless network. The module supports quick networking by specifying channel number. In the usual course of wireless networking, devices would first scan automatically on the current channel, in order to search for the network (or Ad hoc) built by the target AP. This module provides working channel configuration, when the channel of the target network is known, users can specify the working channel directly, and the networking time will be reduced from 2 seconds to about 300 milli seconds, then quick networking is achieved.

Zigbee

Zigbee modules feature a UART interface, which allows any microcontroller or microprocessor to immediately use the services of the Zigbee protocol. All a Zigbee hardware designer has to do in this as it will ensure that the host's serial port logic levels are compatible with the XBee's 2.8- to 3.4-V logic levels. The logic level conversion can be performed using either a standard RS-232 IC or logic level translators such as the 74LVTH125 when the host is directly connected to the XBee UART. The below table gives the pin description of transceiver. Data is presented to the X-Bee module through its DIN pin, and it must be in the asynchronous serial format, which consists of a start bit, 8 data bits, and a stop bit. Because the input data goes directly into the input of a UART within the X-Bee module, no bit inversions are necessary within the asynchronous serial data stream. All of the required timing and parity checking is automatically taken care of by the X-Bee's UART.

Ir sensor

The TSOP21 - series are miniaturized receivers for infrared remote control systems. PIN diode and preamplifier are assembled on lead frame, the epoxy Package is designed as IR filter. The demodulated output signal can directly be decoded by a microprocessor. The main benefit is the operation with short burst transmission codes and high data rates. Photo detector and preamplifier in one package

- Internal filter for PCM frequency
- Improved shielding against electrical field disturbance
- TTL and CMOS compatibility
- Output active low
- Low power consumption
- High immunity against ambient light

The circuit of the TSOP21 is designed in that way that unexpected output pulses due to noise or disturbance signals are avoided. A band pass filter, an integrator stage and an automatic gain control are used to suppress such disturbances. The distinguishing mark between data signal and disturbance signal are carrier frequency, burst length and duty cycle.

Smoke Sensor

Smoke sensor is used to detect any leakage of smoke and any hazardous gases such that an alarm can be initiated to avoid any damages in the industries. These sensors are also used in many applications like corporate and in any office work areas these are linked to fire alarms. And buzzers through the micro-controller. Ionization detectors have an ionization chamber and a source of ionizing radiation. The source of ionizing radiation is a minute quantity of americium-241 (perhaps 1/5000th of a gram), which is a source of alpha particles (helium nuclei). The ionization chamber consists of two plates separated by about a centimeter. The battery applies a voltage to the plates, charging one plate positive and the other plate negative. Alpha particles constantly released by the americium knock electrons off of the atoms in the air, ionizing the oxygen and nitrogen atoms in the chamber. The positively-charged oxygen and nitrogen atoms are attracted to the negative plate and the electrons are attracted to the positive plate, generating a small, continuous electric current. When smoke enters the ionization chamber, the smoke particles attach to the ions and neutralize them, so they do not reach the plate. The drop in current between the plates triggers the alarm.

Conclusion

In these paper Vehicles are equipped with sensors that generate copious amounts of data every second. Vehicles is evolving from a collection of sensor platforms to the Internet of Autonomous Vehicles. Like other instantiations of the Internet of

Things, the Internet of Vehicles will have communications, storage, intelligence and learning capabilities to anticipate the customers' intentions. This article claims that the Vehicular Cloud, the equivalent of Internet Cloud for vehicles, will be the core system environment that makes the evolution possible and that the autonomous driving will be the major beneficiary in the cloud architecture. We showed a vehicular cloud model in detail and discussed potential design perspective with highlights on autonomous vehicle.

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